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## *Milltown Reservoir Sediments Superfund Site Report*

*By Montana Department of Health and Environmental Sciences & Environmental Protection Agency*

## INTRODUCTION

Last summer, the Montana Department of Health and Environmental Sciences (MDHES) and the U.S. Environmental Protection Agency (EPA) began the "Downstream Screening Study" at the Milltown Reservoir Sediments Superfund site. The purpose of the study was to determine if contaminated sediments behind the Milltown Dam are being, or have been, transported downstream, how far they may be moving, and what threats they may pose to public health and the environment. The area of study lay between the dam and the Clark Fork River's confluence with the Bitterroot River, approximately 13 miles. This progress report summarizes the study results.

Beginning May 19,copies of the Downstream Screening Study Data Report will be available to the public. The data report provides preliminary information about trace element concentrations downstream from the reservoir in surface water, ground water, river sediments and irrigated soils. For more information about obtaining a copy of the study, see the section of this report discussing the repositories. MDHES and EPA will hold a public meeting Wednesday, May 24, at 7 p.m. in the auditorium at St. Patrick Hospital in Missoula to discuss the study results with the community and to receive input about the study.

## DOWNSTREAM SCREENING STUDY SUMMARY

The downstream screening study included four investigations: groundwater, surface water, river sediments and irrigated soils. The four areas represent the media which MDHES and EPA believed could have been adversely affected by contaminants released from the dam.

Following is a brief summary of the investigations and their results:

### SURFACE WATER:

The purpose of the surface water investigation was to determine if surface waters such as the Clark Fork River, ponds, springs and seeps, have been contaminated by reservoir sediments. The quality of water coming into the reservoir was compared with downstream water quality. No springs, seeps or ponds other than the Champion International log pond were found, perhaps due to drought conditions and dam drawdown. The surface water investigation was further di-

Cont. on page 3

## SUPERFUND PUBLIC MEETING

Wednesday, May 24, 1989
7 p.m.
St. Patrick Hospital auditorium
Missoula

MDHES and EPA will discuss results of the downstream screening study which began last summer on the Milltown Reservoir Sediments Superfund site.

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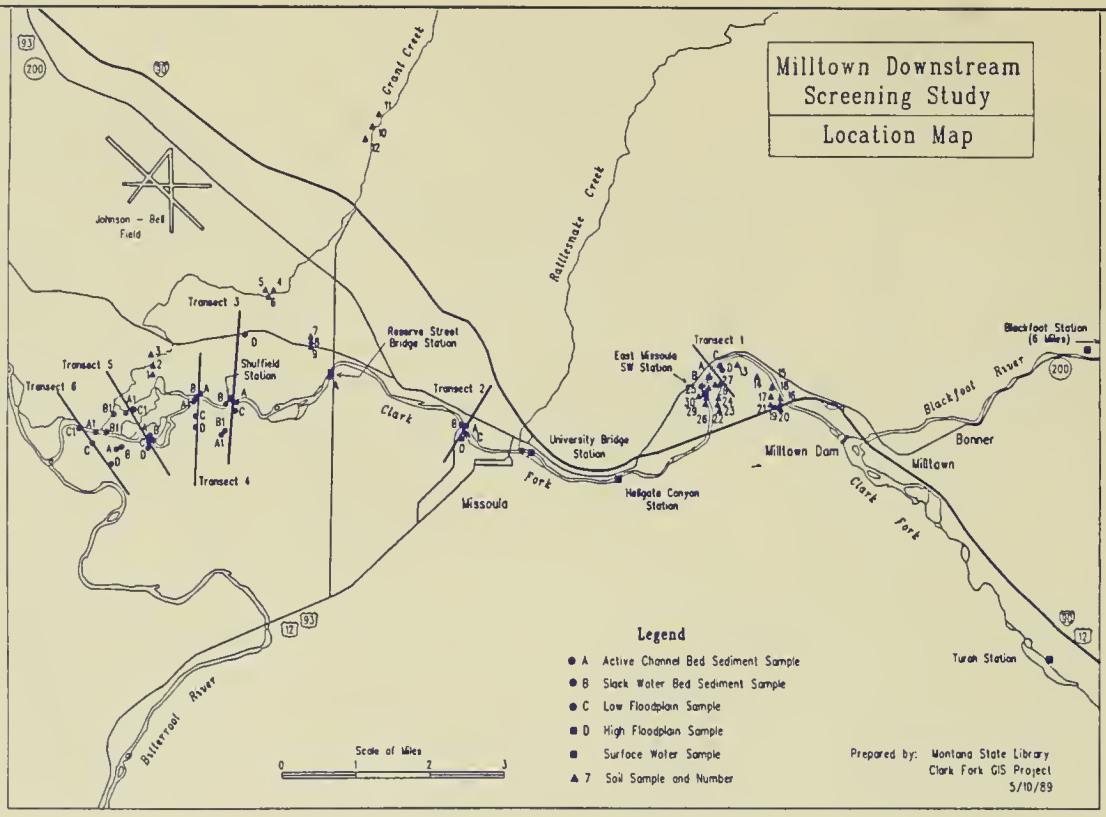



# SITE BACKGROUND

Located about five miles east of Missoula, beside U.S. Interstate 90, the Milltown Dam was built in 1906-1907 to generate electrical power. Since that time, the reservoir has accumulated sediments which have washed down the Clark Fork River. These sediments are rich in heavy metals derived from many years of mining in the Clark Fork Basin. The sediments have contaminated the Clark Fork River and groundwater in Milltown. The reservoir sediments are rich in trace elements such as arsenic, copper, lead, manganese, and cadmium. Elevated concentrations of these elements appeared in the drinkning water of some Milltown residents in 1982, prompting concern by local, state and federal officials and the eventual listing of the site on the National Priority List of Superfund sites.

Following is a list of the major milestones at the Milltown site:

**1981** — MDHES receives complaints about contaminated groundwater in Milltown. Arsenic concentrations are found to be well above Primary Drinking Water Standards and Milltown well users are advised not to use their water for drinking.

**1982** — MDHES funds a University of Montana investigation of the groundwater which indicates the reservoir sediments to be the source of arsenic in the Milltown wells.

**1983** — MDHES and University of Montana conduct additional studies to find an alternate source of drinking water for affected Milltown residents.

— Milltown is added to the National Priority List of Superfund sites.

**1984** — The Superfund Remedial Investigation which includes investigation of the arsenic source and related engineering feasibility studies for the site are completed.

— MDHES installs a new community well in Milltown and residents are hooked up.

**1985** — MDHES hires a contractor to conduct supplemental studies to finish the feasibility study for the site.

— Plumbing and water heaters in some Milltown homes are found to contain arsenic and are replaced.

**1987** — Poor contractor performance requires MDHES to change contractors, causing a delay in site studies.

**1988** — MDHES hires a new contactor, Camp, Dresser and McKee to complete the Feasibility Study and begin the downstream screening study.

**1989** — MDHES and EPA release the Feasibility Study Scoping Document and the Downstream Screening Study Data Report.

— EPA becomes the lead agency at the site.

# DOWNSTREAM SCREENING STUDY

(Cont. from page 1)

vided into the following areas:

**Drawdown investigation:** The drawdown investigation was conducted to gain early summer water quality information below the dam and to monitor any potential water quality changes which may have occurred during Montana Power Company's reservoir drawdown during dam rehabilitation. Forty-nine samples were taken before and during the drawdown. The results showed that the reservoir loses more sediment downstream than it receives from upstream during reservoir drawdowns. There is a corresponding increase in total metals concentrations downstream when there are elevated total suspended sediment concentrations, as is the case during drawdowns.

**Log pond sampling:** Samples were taken from one location at Champion's log pond which is located near the Milltown community wells. The pond was tested for organics used in lumber production, as well as heavy metals. The purpose of the log pond sampling was to determine what materials might be present in the pond which could potentially affect the water quality of the Milltown community wells. The log pond samples contained elevated levels of chloride, arsenic, lead, manganese, zinc and a variety of organic compounds. Water from the nearby community supply wells was within drinking water standards for all compounds analyzed which included heavy metals and organics; phenol at low levels was the only organic detected in the wells.

## GROUNDWATER INVESTIGATION

MDHES and EPA conducted an inventory of active wells from the dam to Hellgate Canyon to identify wells which could potentially receive contamination from the reservoir sediments through the alluvial aquifer. The inventory included West Riverside, Pine Grove and East Missoula. Fourteen of the wells found are considered community wells or public water supplies. Like the surface water investigation, the groundwater investigation was broken down into various studies which included a sole source aquifer review, water level measurements, and groundwater sampling.

**Sole source aquifer review:** Missoula takes its drinking water from the Missoula aquifer (underground water). Some estimates say that as much as 90 percent of Missoula aquifer water comes from the Clark Fork River. MDHES and EPA evaluated any threats which the reservoir sediments may pose to the Missoula aquifer. They found that the aquifer is potentially vulnerable to contamination due to recharge by the Clark Fork River. This does not appear to be a problem at the current time, but could be a concern if increased amounts of sediment were to be washed down the Clark Fork from the reservoir in a situation such as a dam failure. Those wells nearest the river would be most susceptible because their water is derived directly from Clark Fork River recharge. More information will be required to assess that risk.

**Water level measurements:** MDHES measured the elevation of groundwater in wells downgradient of the reservoir to better determine in what direction groundwater flows. This information will help them determine potential areas of contamination.

**Well sampling:** MDHES took samples from community supply wells, private residential wells and monitoring wells in the study area during October and November 1988. The study was conducted to determine the extent or existence of an area of groundwater contaminated by arsenic. The study results showed that the water from each of the drinking water wells sampled was well below established standards for drinking water. However, arsenic and manganese concentrations in wells used for groundwater monitoring only did exceed those standards. The study results appear to confirm there is an area of higher arsenic concentrations in groundwater downgradient of the Milltown Reservoir sediments. MDHES and EPA will gather more information about the extent of the contamination.

## RIVER SEDIMENTS INVESTIGATION

This portion of the downstream screening study was conducted to determine the extent to which metals may have contaminated the Clark Fork River sediments downstream from the dam. MDHES collected samples in six locations between Bandmann Flats in East Missoula and the Clark Fork's confluence with the Bitterroot River. The river sediments sampling results revealed that concentrations of arsenic, copper, zinc, lead, cadmium and manganese exceeded levels reported for nearby tributaries. Metals concentrations were significantly higher in slack water and active channel sediments than in floodplain sediments. Compared to levels in similar sediments above the dam, the level of metals in sediments below the dam to the Bitterroot River are much lower.

## IRRIGATED SOILS INVESTIGATION

Because the Clark Fork River has carried contamination, via irrigation water, into agricultural lands upstream of the dam, MDHES and EPA wanted to find out if the river was carrying contamination into lands below the dam during irrigation. Thirty samples were taken at two general locations having four different soil types with one non-irrigated location being used for comparison. MDHES and

EPA found that irrigation water is not transporting heavy metals into aqricultural land from the Clark Fork such that any measurable concentrations are noticable.

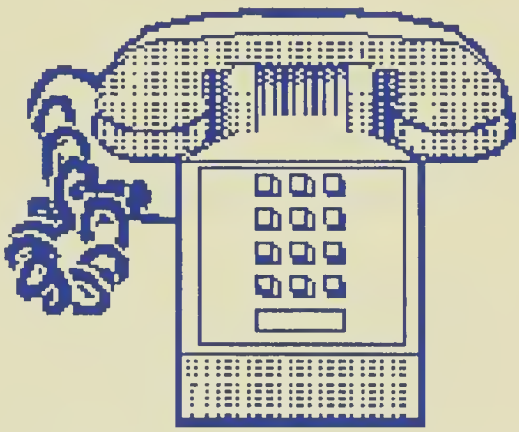
**FURTHER STUDIES TO BE CONDUCTED**

The downstream screening study results have led MDHES and EPA to determine that only two areas of investigation will need further definition. MDHES and EPA plan to further delineate the arsenic plume shown in the monitoring wells down-gradient of Milltown. They will also monitor wells in the area to determine the arsenic's potential movement. The potential impacts on the Missoula aquifer will be considered in each of the cleanup alternatives considered during the feasibility study.

## WHERE TO FIND MILLTOWN SITE INFORMATION

The public is encouraged to read and become familiar with information about the Milltown Reservoir Sediments Superfund site. Documents for the site are available at the Missoula Public Library, the Missoula County Health Department in the County Annex Building, at the Booner School Library and at the University of Montana Mansfield Library.

For more information about the site or about Superfund in general, call Janies Stiles at the Montana Department of Health and Environmental Sciences in Helena1-800-648-8465 (toll-free in Montana) or (406)444-2821. The site project managers for MDHES and EPA are also happy to answer questions the public may have. The new MDHES project manager is Bill Olsen. He can be reached at 1-800-648-8465 or 444-2821. The EPA project manager is Ken Wallace in Helena. His number is (406)449-5414.



## TOLL-FREE SUPERFUND HOTLINE

If you have questions, comments or concerns about a Superfund site in Montana, or about Superfund, in general, please call our toll-free hotline. The hotline is in operation from 8 a.m. to 5 p.m. weekdays, except holidays.
In-state use only!

**1-800-648-8465**

## ARE YOU ON OUR MAILING LIST?

If you would like your name added to, or deleted from, the Milltown site mailing list, or if you wish to update your address, please fill out, detach and mail this form to Janie Stiles, c/o Montana Department of Health and Environmental Sciences, Room B201, Cogswell Building, Helena, MT 59620. If you recieved this Progress Report by mail, there is no need to complete this form.

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## *Milltown Reservoir Sediments Superfund Site Report*

***By Montana Department of Health and Environmental Sciences & Environmental Protection Agency***

## INTRODUCTION

Superfund activities are proceeding again at the Milltown site. This past summer, the Montana Department of Health and Environmental Sciences (MDHES) and the U.S. Environmental Protection Agency (EPA) resumed studies. This Progress Report is the first one in several years for the Milltown site but not the last. You will begin seeing Progress Reports more often as activities occur and as findings are released.

This Progress Report will provide site background and current site status, announce the date and time for a public meeting, and describe future activities, the downstream screening study and Montana Power Company's rehabilitation of the Milltown Dam.

## SITE BACKGROUND

Located about five miles east of Missoula, beside U.S. Interstate 90, the Milltown Dam was built in 1906-1907 to generate electrical power. Since that time, the reservoir has collected sediments which have washed down the Clark Fork River. These sediments are rich in heavy metals derived from many years of mining in the Clark Fork Basin. The sediments have contaminated the Clark Fork River and groundwater in Milltown.

Following is a list of the major milestones at the Milltown site:

1981 – MDHES receives complaints about contaminated groundwater in Milltown. Complaints are later confirmed and Milltown well users are advised not to use their water for drinking.

1982 – MDHES funds a University of Montana investigation of the groundwater indicates the reservoir sediments to be the source of arsenic in

(Cont. on page 2)

## PUBLIC MEETING

**7:00 P.M.**

**FEBRUARY 8, 1988**

**BONNER SCHOOL MUSIC ROOM**

Superfund public meeting to discuss the Milltown Reservoir Sediments site Feasibility Study Scoping Document

## SITE BACKGROUND

(Cont. from page 1)

the Milltown wells.

– Milltown is added to the national list of Superfund sites.

1983 – Additional studies are conducted to find an alternate source of drinking water for affected Milltown well owners.

1984 – The Superfund Remedial Investigation for the site is completed.

– A new municipal well is installed and residents are hooked up.

1985 – MDHES hires a contractor to do supplemental studies to finish the feasibility study for the site.

– Plumbing and water heaters in some Milltown homes are replaced.

1987 – Poor contractor performance requires MDHES to change contractors which causes a delay in studies at the site.

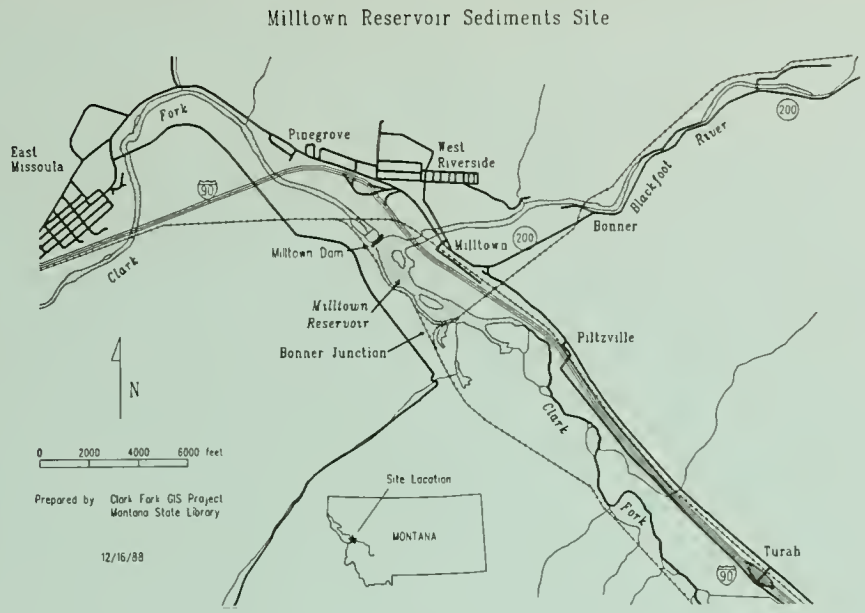
1988 – MDHES hires a new contractor to complete the Feasibility Study.

## WHERE ARE WE NOW?

The Superfund process has many steps, beginning with the discovery of a site and ending with cleanup. Between these two points, MDHES must complete a number of required actions. After a site is discovered, it is added to a National list of Superfund sites. The Milltown Reservoir site was added to the list in 1982. Next the remedial investigation is conducted to help determine what types of contamination are at the site, where the contamination is and how serious it is. Milltown's Remedial Investigation was conducted in 1984. Arsenic and heavy metals have been found at elevated levels at the site.

The next step in the process at Milltown involves filling gaps in the Remedial Investigation Report of 1984 and conducting the feasibility study. The feasibility study will consist of a detailed analysis of alternatives for cleaning up contamination at the Milltown Reservoir. This past summer, MDHES hired environmental consulting firm, Camp, Dresser, and McKee (CDM), to develop a plan to conduct additional downstream investigations and complete the feasibility study. CDM's plan will be published as the Milltown Reservoir Sediments Site Feasibility Study Scoping Document, which will be available at site repositories by January 9, 1989. The site repositories are the Bonner School Library and the University of Montana Mansfield Library.

During late summer and this past fall, the contractors took numerous samples of groundwater and measurements of well depths in the neighborhoods northwest of Milltown. The results of these samples and measurements will help MDHES determine where groundwater flows and if the contamination under Milltown is spreading. The results of these studies will also be used to evaluate alternatives for cleanup in the Feasibility Study.




## PUBLIC MEETING IN FEBRUARY

An informational public meeting will be held February 8 at the Bonner School Music Room in Bonner at 7:00 p.m. to discuss the Milltown Reservoir Sediments Site Feasibility Study Scoping Document. MDHES will present recommendations for completing the Feasibility Study and will seek public input. The Scoping Document proposes that the following information needs must be met before the Feasibility Study can be completed:

1) Inventory of potentially protected resources, including historical resources, endangered species, and an assessment of wetlands:

Superfund law requires an evaluation of the impact of proposed cleanup actions upon historic and cultural resources, endangered species, wetlands and flood plains. In order to begin this evaluation, MDHES must gather basic information and identify the presence of these resources. EPA and MDHES have proposed that a cultural resources and wetlands assessment be conducted. In addition, a biological assessment may be needed if threatened, endangered or candidate species are found in the site area.

2) Groundwater investigation to include information about the source, flow and quality of groundwater in the area:

Additional groundwater investigations are needed to supplement data collected previously at the site. In particular, the investigation will look at the potential of Milltown Reservoir contaminants to move downstream into both ground and surface water. MDHES and EPA propose gathering more information on the contamination source, flow, and quality of groundwater in the area.

(Cont. on page 4)

## PUBLIC MEETING IN FEBRUARY

(Cont. from page 3)

3) Surface water investigation:

Additional surface water investigations are needed to help MDHES and EPA evaluate potential solutions to contamination problems. The two agencies propose the collection of data to characterize existing stream flow and water quality, processes controlling sediment deposition and transport in the reservoir, and relationships between ground and surface water.

4) Reservoir sediments investigation:

Previous investigations have adequately characterized the extent of contamination in the reservoir sediments. MDHES and EPA propose to collect a few additional samples to verify previous sampling and to assess the sediments placed in MPC's upland disposal area near Bonner Junction.

5) Endangerment assessment:

The Endangerment Assessment is considered part of the Feasibility Study and consists of a baseline public health evaluation and environmental assessment for contaminants at the site. In order to conduct the Endangerment Assessment, MDHES and EPA propose to collect additional data on concentrations of contaminants of concern, potential ways people are exposed to those contaminants, and impacts of contaminants on wildlife.

## WHAT'S NEXT ?

The status of the Milltown reservoir site may soon be changed. Until now, the site has been "fund-lead" meaning that EPA or MDHES takes the lead and pays for investigations and activities with money from the Superfund trust fund. One responsible party has expressed a strong desire to take the lead to conduct the Feasibility Study which will outline the options for site cleanup. MDHES and EPA will begin negotiations in February with the responsible party to pay for and conduct the Feasibility Study. If the responsible party takes the work, MDHES or EPA will oversee the work under a legal document specifying what the responsible party must do. No matter what happens, the public will remain involved in the process and will have the opportunity to comment on proposed cleanup solutions.

**Superfund Hotline**

If you have questions, comments , or concerns about the Superfund program, call

**1-800-648-8465**

## DOWNSTREAM SCREENING STUDY

CDM collected samples for the downstream screening study this summer. The objective of this study is to determine if metal contaminants and arsenic have migrated from Milltown Reservoir, and whether these contaminants have the potential to impact public health and the environment along the Clark Fork between Milltown Dam and its confluence with the Bitterroot River. The screening study is the first step in the Superfund process for areas downstream of Milltown Dam. If the MDHES and EPA find contaminants below the dam at levels of concern, the agencies may conduct further cleanup investigation in the form of a Remedial Investigation/Feasibility Study.

During this summer and fall, CDM collected surface water, groundwater, irrigated soils, and river sediment samples for the screening study. Laboratories are currently analyzing the samples, and the results will be outlined in the Milltown Downstream Screening Study Report which is expected to be published in spring 1989, and will be available at the site repositories (see public comment section later in this report).

## MPC DAM REHABILITATION

Under an order from the U.S. Federal Energy Regulatory Commission (FERC), Montana Power Company (MPC) began rehabilitating the 80-year-old Milltown Dam last June. This work comprises Phase II of the rehabilitation project and involves rebuilding the dam's dividing block and water intake structures to the power house. MPC completed previous work on the dam under Phase I in 1986 when they rebuilt the spillway. Currently MPC has constructed a coffer dam upstream of the power house and has removed reservoir sediments from behind the dam. These sediments may contain heavy metal contamination. As a precaution, the sediments were placed in a lined disposal pond upstream at Bonner Junction, on the south side of the Clark Fork River. When MPC completes the dam rehabilitation in summer 1989, the sediment disposal pond will be covered with impermeable clay. The Superfund Feasibility Study will evaluate the sediment disposal pond to determine if it poses any long-term health or environmental threats. The two agencies will also select an action to permanently dispose of the sediments. The action selected for the disposal pond will be consistent with the final solution for the entire Superfund site.

## PUBLIC ENCOURAGED TO BECOME INVOLVED

At various points throughout the Superfund process, EPA and MDHES will solicit public input. One such opportunity for public input will begin January 9 and run through February 17. During this month, the public is encouraged to review the Feasibility Study Scoping Document and submit written suggestions to MDHES or EPA. A copy of the Scoping Document can be found at the site repositories which are located at the Bonner School Library and at the University of Montana Mansfield Library. For more information about the Scoping Document and to submit suggestions, call or write any of the following people:

Philip Hertzog, project manager
or Janie Stiles, public information officer
Room B201, Cogswell Building
Montana Department of Health and Environmental Sciences
Helena, MT 59620
(406) 444-2821 or 1-800-648-8465

or

Ken Wallace, project officer
Federal Building, drawer 10096
301 South Park Street
U.S. Environmental Protection Agency
Helena, MT 59601 (406)449-5414

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